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**NCI TOBACCO CONTROL
MONOGRAPH SERIES**

21

The Economics of Tobacco and Tobacco Control

**IN COLLABORATION WITH
WORLD HEALTH ORGANIZATION**

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Recently Published Monographs

Phenotypes and Endophenotypes: Foundations for Genetic Studies of Nicotine Use and Dependence. Tobacco Control Monograph No. 20. NIH Publication No. 09-6366, August 2009.

The Role of the Media in Promoting and Reducing Tobacco Use. Tobacco Control Monograph No. 19. NIH Publication No. 07-6242, August 2008.

Greater than the Sum: Systems Thinking in Tobacco Control. Tobacco Control Monograph No. 18. NIH Publication No. 06-6085, May 2007.

Evaluating ASSIST: A Blueprint for Understanding State-level Tobacco Control. Tobacco Control Monograph No. 17. NIH Publication No. 06-6058, October 2006.

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Preface: National Cancer Institute

For more than 25 years, the National Cancer Institute’s Tobacco Control Monograph series has provided timely, authoritative summaries on a wide variety of issues in tobacco use and health. These topics have included: the role of the clinician in addressing tobacco use, the health effects of exposure to secondhand smoke, the health hazards of cigars, the risks associated with smoking “low-tar” cigarettes, the impact of tobacco control policies, and the role of the media in both promoting and reducing tobacco use. These monographs have served as formal reviews of the evidence for scientists and the general public, and their findings are often used and cited by policymakers in the United States and abroad.

This monograph, the 21st volume in the series, represents a partnership between the National Cancer Institute and the World Health Organization (WHO). We are grateful for the work of numerous distinguished researchers who served as editors, chapter authors, and reviewers. It is especially fitting to publish this monograph in 2016, marking the fifth anniversary of the NCI Center for Global Health. The Center was created to reduce the global cancer burden by creating sustainable international partnerships, supporting research and scientific training, and disseminating information on best practices for cancer prevention and control.¹ By disseminating the latest science and best practices on the economics of tobacco and tobacco control, this monograph makes an important contribution to the Center’s goals.

Research to address the tobacco epidemic is important because tobacco use accounts for about six million deaths worldwide every year, including one in every five cancer deaths. As explained by Dr. Harold Varmus, former NCI Director, and Dr. Harpal Kumar, CEO of Cancer Research UK, “with respect to modifiable risk factors for cancer, there is a consensus that tobacco use remains, by far, the most important at a global level.”^{2,p.3} Indeed, the International Agency for Cancer Research (IARC)³ has identified 15 cancer types or subtypes for which tobacco is a known risk factor, and lung cancer—largely caused by tobacco use—is the leading cause of cancer death in men worldwide. At the global level, an estimated 41% of men and 9% of women (age ≥ 15 years) smoke cigarettes, including *nearly half of all men* (48%) who reside in low- and middle-income countries (LMICs). Indeed, of the 800 million adult men who currently smoke cigarettes, more than 80% live in LMICs, foreshadowing grave consequences for health in these countries. Use of smokeless tobacco also conveys a major cancer burden. More than 300 million men and women in at least 70 countries currently use smokeless tobacco, putting themselves at increased risk for oral, esophageal, and pancreatic cancer.⁴

This monograph addresses a topic of increasing urgency for global cancer control efforts: the economics of tobacco and tobacco control. NCI has supported and conducted a wide range of research related to tobacco use and health for over half a century; research on economic aspects of tobacco control has been an important part of our research agenda and will continue to be important for making further progress. More than 20 years ago, NCI commissioned an expert panel to review the evidence on the impact of cigarette excise taxes on smoking among children and adults. The resulting report⁵ was part of an emerging body of research that demonstrated a robust relationship between price, including tobacco tax increases, and cigarette consumption. Additionally, when the American Stop Smoking Intervention Study for Cancer Prevention (ASSIST)⁶ was launched in 1991 through a public/private partnership between NCI and the American Cancer Society, higher tobacco taxes were one of the four policy changes the partnership focused on (along with eliminating exposure to secondhand smoke, limiting tobacco advertising and promotions, and reducing youth access to tobacco products). During the ASSIST project, 12 of the 17 ASSIST states raised tobacco taxes, and the capacity the project helped

build in tobacco control and research dissemination facilitated a number of states to pass further tobacco tax increases.⁶

As this volume makes clear, economic methods and concepts play an important role across a wide variety of domains in tobacco control research, from understanding the structure of the tobacco product market, to evaluating the effectiveness and cost-effectiveness of tobacco control policies, to estimating the costs of tobacco-related disease and mortality. And economic arguments are often used—and misused—by the tobacco industry and its allies to pose objections to effective tobacco control policy interventions.

A key aim of this volume has been to highlight the tremendous public health burden posed by tobacco use worldwide and the potential for evidence-based interventions to reduce tobacco-related morbidity and mortality. The monograph builds on previous literature, especially the World Bank's seminal report *Curbing the Epidemic* (1999)⁷ and the companion book *Tobacco Control in Developing Countries*,⁸ and provides the most comprehensive examination to date of global tobacco control efforts from an economic perspective since the 2003 adoption of the World Health Organization's Framework Convention on Tobacco Control (WHO FCTC).⁹

This volume includes data from many low- and middle-income countries (LMICs), where the tobacco control landscape has been undergoing rapid change. Including data on LMICs is an especially important contribution because only limited data for these countries were available when *Curbing the Epidemic* and *Tobacco Control in Developing Countries* were published.

The evidence described in this monograph provides support for many important conclusions, some of which we highlight here. The health and economic burden of tobacco use is already enormous and is increasingly borne by LMICs. At the same time, the market power of tobacco companies has increased, posing new challenges for public health. Although a range of evidence-based policy and program interventions have been shown to be effective for controlling tobacco use and the resulting health and economic costs, these strategies are not yet fully used by countries around the world, including the United States. Tobacco control interventions are highly cost-effective, and much evidence demonstrates that they do not harm economies. Tobacco control efforts can reduce the disproportionate burden that tobacco use imposes on the poor, thereby reducing the often wide disparities in health outcomes between rich and poor. Perhaps most important, this monograph provides reason for hope: *progress is being made in controlling the global tobacco control epidemic*. Indeed, in most world regions and country income groups, the prevalence of tobacco use is remaining constant or falling.

This volume also identifies areas where ongoing research and surveillance are needed, including the complex relationship between tobacco use and poverty, effective strategies to control illicit trade in tobacco, and economically viable alternatives to tobacco growing and manufacturing. But research alone cannot solve this problem. To ensure that evidence is effectively translated into practice, more and diverse stakeholders are needed. For example, given the evidence described in this monograph on the impact of tobacco use on economic development in LMICs, international development organizations have a stake in successful tobacco control. Since 2014, NCI has partnered with the United States Agency for International Development to support tobacco control research projects in the context of development goals through the Partnerships for Enhanced Engagement in Research program.¹⁰

This is an especially important time to invest in research to support global tobacco control research. It is a time of rapid change characterized by implementation of innovative tobacco control interventions in response to the WHO FCTC, widespread use of new technologies and mass media channels, introduction of new tobacco products, and diverse political and economic developments. In addition, the tobacco industry has responded to successes in tobacco control by taking aggressive new actions designed to weaken or eliminate effective tobacco control efforts—for example, by mounting legal challenges that take advantage of trade and investment agreements.

The World Health Assembly has called on governments to reduce the prevalence of tobacco use by 30% by 2025,¹¹ which would prevent more than 200 million deaths from tobacco during the remainder of the century. Cancer research funders such as the NCI can make an important contribution to this goal by continuing to support research and research capacity building for tobacco control. We can also put forth the message that—despite the need for continued research—effective tools exist to curtail the global tobacco epidemic. As this monograph appropriately concludes, “Government fears that tobacco control will have an adverse economic impact are not justified by the evidence. The science is clear; the time for action is now.”

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Preface: World Health Organization

Globally, approximately six million people a year die from diseases caused by tobacco use, including 600,000 from exposure to secondhand smoke. This is six million too many. Every single death from tobacco is a preventable tragedy.

The Economics of Tobacco and Tobacco Control, a collaboration between the World Health Organization and the National Cancer Institute (United States), is an outcome of teamwork among international authors and reviewers from across academia, international organisations, and government. It represents the culmination of many years of research on the economics of tobacco and tobacco control, and is a truly remarkable contribution to what is an important and ever-evolving area of public health. We welcome the publication of such a timely and relevant piece of work in the area of the economics of tobacco and tobacco control.

Origins of the monograph

The academic background of this work stems from the seminal 1999 World Bank publication *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. It is testament to the weight of this original publication that its fundamental conclusions have stood the test of time. *Curbing the Epidemic* showed that many of the commonly used economic arguments against tobacco control are not supported by evidence, particularly in relation to tobacco taxation. *Curbing the Epidemic* also demonstrated the huge economic losses from tobacco use. *The Economics of Tobacco and Tobacco Control* represents the most comprehensive publication in this area in recent years, and a particular strength is the inclusion of robust data from low- and middle-income countries.

Advances in tobacco economics and tobacco control

The Economics of Tobacco and Tobacco Control highlights progress in a number of areas. Most importantly, the WHO Framework Convention on Tobacco Control (WHO FCTC) has since entered into force in 2005. The only public health treaty under the auspices of WHO, and with 180 Parties to the Convention at the time that this monograph goes to print, the WHO FCTC stands today as one of the United Nations' most widely and rapidly embraced international treaties. It binds parties to commitments to introduce and implement tobacco control policies in key demand and supply reduction areas.

An increasing number of partnerships, from both the public and the private sectors, are supporting tobacco control. In collaboration with Bloomberg Philanthropies, in 2007 WHO launched the MPOWER package of policy measures: the most cost effective and efficient demand reduction articles of the WHO FCTC, designed and packaged to facilitate country-level implementation. WHO estimates that 2.8 billion people worldwide are covered by at least one of these life-saving measures at the highest level of achievement.

At the turn of the millennium, advances in policy such as the introduction of plain packaging seemed little more than a chimera even for the most ardent tobacco control advocates. Today, countries around the world are introducing ever larger graphic health warnings, and countries including Australia and the United Kingdom have introduced plain packaging of tobacco products, with several more countries having announced intention to introduce the legislation.

From New York to Beijing, and from Russia to Madagascar, cities, provinces and countries are adopting smoke-free legislation that prohibits smoking in public places and thereby protects populations from exposure to dangerous secondhand smoke, which currently causes approximately 600,000 deaths per year. In 2008, Beijing hosted the world's first entirely smoke-free summer Olympic Games, and smoke-free sporting events are becoming increasingly common worldwide. Together with measures to increase awareness of the dangers of tobacco such as mass media campaigns, and policies including prohibiting advertising, promotion and sponsorship of tobacco products, and introducing large graphic health warnings on tobacco packets; banning smoking in public places plays an important role in de-normalising tobacco use.

Progress is being made in combating illicit trade, which threatens revenues from tobacco taxation and increases the affordability and accessibility of tobacco. The Protocol to Eliminate Illicit Trade in Tobacco Products, the first Protocol of the WHO FCTC, was adopted on 12 November 2012 at the 5th session of the Conference of the Parties in Seoul, Republic of Korea, and is open for ratification, acceptance, approval or accession by the Parties to the WHO FCTC. At the end of 2016, an additional 17 Parties are needed in order for the Protocol to enter into force. The Protocol, which aims to eliminate all forms of illicit trade in tobacco products, will help ensure that the public health impact of higher tobacco taxes is more effective, when implemented comprehensively alongside other tobacco control measures.

The 2015 Addis Ababa Action Agenda, the outcome document of the 3rd International Conference on Financing for Development, recognizes the importance of tobacco taxation as a public health measure in reducing demand for tobacco and saving lives, as well as a mechanism to increase domestic resource mobilisation for development. The Addis Ababa Action Agenda will drive the financing landscape for the Sustainable Development Goals, under the 2030 Agenda for Sustainable Development.

Challenges to tobacco economics and tobacco control

While progress has been made in global tobacco control, it remains uneven, with a vast majority of developing economies continuing to see increases in tobacco use. *The Economics of Tobacco and Tobacco Control* describes new challenges. The market power of global tobacco companies is increasing and new and emerging tobacco products are posing regulatory challenges.

The tobacco industry continues to work to promote its deadly product, and tobacco industry interference in advancing public health policies is a grim reminder of reality in many countries. The industry continues to devote substantial resources and efforts to employing a range of tactics intended to interfere with the implementation of provisions of the WHO FCTC. In particular, they continue to promote misleading economic arguments against tobacco control, such as the long-peddled argument that increasing taxation on tobacco products will lead to increased illicit trade and lost revenues. More broadly, litigation or the threat of litigation from the tobacco industry against governments can act as a very significant economic deterrent to the introduction of strong tobacco control measures.

The economics of tobacco and tobacco control is a broad and far-reaching discipline that has implications far beyond the realm of public health. Covering topics as broad as the relationship between tobacco use and poverty, licit and illicit trade flows, taxation of tobacco products, and the economic burden of tobacco-inflicted disease, the economics of tobacco control sits at the core of development.

The road ahead for tobacco economics and tobacco control

The World Health Organization, alongside the Secretariat of the WHO FCTC, works to support Parties to the Convention and Member States of the World Health Assembly in implementing strong and evidence-based tobacco control measures worldwide. The WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020, endorsed by the World Health Assembly, calls for countries to reduce relative prevalence of tobacco use by 30% by 2025. Under Sustainable Development Goal 3, adopted by the United Nations in September 2015, governments are called upon to implement the WHO Framework Convention on Tobacco Control, and to reduce the prevalence of noncommunicable diseases, of which tobacco is a key risk factor, by 2030. Achievement of these internationally agreed goals and targets will not be possible without the mainstreaming of consideration of economic issues into tobacco control, into action to tackle noncommunicable diseases, and more broadly into all areas of health and development.

The fight against tobacco-related disease is far from over.

Now more than ever, we need to work together across nations to implement comprehensive measures for tobacco control. The fate of millions of lives is dependent upon governments worldwide acting decisively to end this global epidemic. We hope that this monograph will provide vital materials and supporting evidence for countries and policy makers who are concerned with tobacco control.

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Abbreviations

Abbreviation/Acronym	Definition
AFR	African Region
AMR	Region of the Americas
ATC	American Tobacco Company
BAT	British American Tobacco
CDC	U.S. Centers for Disease Control and Prevention
CNTC	China National Tobacco Corporation
DALY	Disability-adjusted-life-year
DHHS	U.S. Department of Health and Human Services
EMR	Eastern Mediterranean Region
ENDS	Electronic nicotine delivery systems
EU	European Union
EUR	European Region
FAO	Food and Agricultural Organization of the United Nations
FDA	U.S. Food and Drug Administration
FDI	Foreign direct investment
GATS	Global Adult Tobacco Survey
GYTS	Global Youth Tobacco Survey
HICs	High-income countries
IARC	International Agency for Research on Cancer
ITC	International Tobacco Control Policy Evaluation Project
ITG	Imperial Tobacco Group
JTI	Japan Tobacco International
L&M	Liggett & Myers Tobacco Company
LMICs	Low- and middle-income countries
MPOWER	M: Monitor tobacco use and prevention policies; P: Protect people from tobacco smoke; O: Offer help to quit tobacco use; W: Warn about the dangers of tobacco; E: Enforce bans on tobacco advertising, promotion and sponsorship; R: Raise taxes on tobacco
NCI	U.S. National Cancer Institute
PLC	P. Lorillard Company
PMI	Philip Morris International
PPP	Purchasing Power Parity
RJR	R. J. Reynolds Tobacco Company
SHS	Secondhand smoke
SEAR	South-East Asia Region
VAT	Value-added tax

Abbreviations

Abbreviation/Acronym	Definition
WHO	World Health Organization
WHO FCTC	World Health Organization Framework Convention on Tobacco Control

Glossary

Term	Definition
<i>Ad valorem</i> excise tax	A tax levied on selected products based on value, such as retail selling price, the manufacturer's (or ex-factory) price, or the cost insurance freight (CIF) price
Affordability	Price relative to per capita income
Bootlegging	The purchase of tax-paid tobacco products in a lower tax or price jurisdiction for resale in a higher tax or price jurisdiction
Crop substitution	The creation of a strategy portfolio that allows the reduction of dependence on a single crop and reduces instability in the process of reproduction caused by faults in production activities; also referred to as tobacco farming diversification
Disability-adjusted life-years (DALY)	A measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability. Calculated as the sum of the years of life lost (YLL) due to premature mortality in the population and the years lost due to disability (YLD) caused by a specific health condition or its consequences
Earmarked tax	A tax for which some or all of the revenues generated are allocated to specific expenditure programs; also referred to as dedicated taxes or hypothecated taxes
Excise tax	A tax or duty imposed on the sale or production of selected products, such as tobacco products
Farm gate price	The price, in local currency, at which the farmer sells tobacco leaf
Foreign direct investment (FDI)	An investment whereby an entity residing in one economy ("direct investor") obtains a lasting interest in an entity residing in an economy other than that of the investor ("direct investment enterprise")
High-income countries	Countries with a gross national income per capita of US\$ 12,736 or more in 2014, as calculated using the World Bank Atlas method
High-income OECD countries	Countries that are classified as high income by the World Bank and are members of the Organisation for Economic Co-operation and Development
Illicit trade	Any practice or conduct prohibited by law and which relates to production, shipment, receipt, possession, distribution, sale, or purchase, including any practice or conduct intended to facilitate such activity
Import duty (or import tax)	A tax imposed on selected imported products, such as tobacco products
Income elasticity of demand	The percentage change in consumption resulting from a 1% increase in real (inflation-adjusted) income
Low-income countries	Sometimes referred to as developing economies; countries with gross national per capita income of US\$ 1,045 or less in 2014, as calculated using the World Bank Atlas method
Middle-income countries	Sometimes referred to as developing economies. Lower middle-income countries have gross national income (GNI) of US\$ 1,046–\$4,125 per capita (2014); upper middle-income countries have per capita GNI of US\$ 4,126–\$12,735 (2014); as calculated using the World Bank Atlas method
Mixed system	A tax that includes both a specific tax component and an <i>ad valorem</i> tax component; also referred to as mixed tax or hybrid tax
Opportunity cost	A cost measured by reference to the opportunities forgone at the time an asset or resource is used, as distinct from the costs incurred at some time in the past to acquire the asset, or the payments that could be realized by an alternative use of a resource
Price elasticity of demand	The percentage change in consumption resulting from a 1% increase in real (inflation-adjusted) price
Privatization	The transfer of a business, industry, or service from public to private ownership and control; in the case of the tobacco industry, public ownership often constitutes a monopoly

Term	Definition
Purchasing power parity (PPP)	An expression of the relationship between the amount of a country's currency that would be required to buy a particular good or service in that country's domestic market to the amount of U.S. dollars that would be required to buy the same good or service in the U.S. market
Smuggling	A customs offense consisting of the clandestine movement of goods across a customs frontier in order to evade customs control
Specific excise tax	A tax levied on selected products based on quantity, such as number of cigarettes or weight of tobacco
Tax avoidance	The use of legal methods to circumvent tobacco taxes, including tax-free purchases and the purchase of tobacco products in other jurisdictions in amounts allowable under customs regulations
Tax burden	The sum of all taxes—including general sales taxes, such as a value-added tax—expressed as a percentage of the retail price; also referred to as tax incidence
Tax evasion	The use of illegal methods to circumvent tobacco taxes, including the purchase of smuggled and illegally manufactured tobacco products
Tiered tax	A tax applied at different rates to different variants of a given product, based on various factors such as price, product characteristics, or production characteristics
Trade down	To move from high- to low-priced brands in response to a relative price increase
Trade liberalization	The move towards freer trade through the reduction of tariff and other barriers
Uniform tax	A tax applied at the same rate to all variants of a given product, such as all cigarette brands and brand variants
Value-added tax (VAT)	A tax imposed on a wide variety of products (domestic and imported), based on the value added at each stage of production or distribution
Value chain	The full range of activities required to bring a product, such as tobacco, from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), to delivery to final consumers and use